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The long-term goal of this program was to determine the in situ physical properties of sand in shallow water sediments, particularly permeability and porosity. To do this, it was necessary to develop the UW Sand Probe as a new instrument for in situ physical property measurements.

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Analysis of *in situ* Permeability Data from the SAX99 DRI Site

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LONG-TERM GOALS

The long-term goal of this program was to determine the *in situ* physical properties of sand in shallow water sediments, particularly permeability and porosity. To do this, it was necessary to develop the UW Sand Probe as a new instrument for *in situ* physical property measurements.

OBJECTIVES

The objective of this research program in the present fiscal year was to analyze the permeability data acquired by the UW Sand Probe during the SAX99 program. This probe was deployed during the October, 1999 field season and 19 physical property stations were occupied during that cruise. Final data analysis was completed in our laboratory during the present fiscal year in collaboration with SeaPROBE (Dr. Richard Bennett) and the final results are being made available to the SAX99 researchers and the general scientific community.

APPROACH

The raw data acquired during the field program required substantial post-cruise processing. Prior and after each of the deployments within the sediments for the 19 stations, a 'water run' calibration test was run – and the raw data required normalization for each of these calibration tests. The processed data was compared to laboratory calibration runs and internal consistency checks were applied. A full error analysis on the completed data set was also done.

WORK COMPLETED

All of the tasks (data analysis, calibration, final processing and dissemination of data) listed in the proposal were completed.

RESULTS

The results of the final data analysis are described in detail in the publications listed at the end of this report. In summary, this program produced the first successful *in situ* measurements of sediment permeability over a large survey area that has even been done.

IMPACT/APPLICATIONS

The final processed permeability data will be used by the SAX99 investigators to evaluate the hypothesis that Biot Slow Waves could be responsible for the anomalous scattering of acoustic energy, the primary focus of the SAX99 program.

TRANSITIONS

N/A

RELATED PROJECTS

N/A

PUBLICATIONS

Richardson, M.D. et al [39 co-authors] (2001), Overview of SAX99: Environmental Considerations, IEEE Journal of Ocean Engineering, v26, 26-53.

Bennett, R.H., M.H.Hulbert, C. Curry, H. Paul Johnson, M. Hutnak, and K. Curry (2001), In Situ Permeameter Probe for Coastal Marine Sediments, to be submitted.